Direct proportion: worded problems

1

The cost of rope is directly proportional to its length. 4 m of rope cost £12.
How much do 9 m cost?

Metres	Cost (£)
0	0
4	12
1	3
9	

÷ 4 ÷ 4

Answer

2

The cost of cinema tickets is directly proportional to the number bought.
6 tickets cost £48. How much do 5 tickets cost?

Tickets	Cost (£)
0	0
6	48
1	
5	

Answer

3

The mass of some bags of sand is directly proportional to the number of bags.
8 bags have a mass of 200 kg.
Find the mass of 3 bags.

Bags	Mass (kg)
0	0

Answer

4

The cost, C pounds, of hiring a canoe is directly proportional to the time, t hours.
3 hours cost £21.
(a) Find a formula for C in terms of t.
(b) Find the cost of 5 hours.

Hours	Cost (£)
0	0
3	21
1	7

÷ 3 ÷ 3

(a)

(b)

5

The distance, d km, a train travels is directly proportional to the time, t hours.
In 2 hours it travels 150 km.
(a) Find a formula for d in terms of t.
(b) How far does it travel in 3 hours?

Hours	Kilometres
0	0
2	150
1	

(a)

(b)

6

The mass of flour, F grams, is directly proportional to the number of cakes, n.
6 cakes need 270 g of flour.
(a) Find a formula for F in terms of n.
(b) How much flour do 10 cakes need?

Cakes	Flour (g)
0	0

(a)

(b)

7

The cost, C pounds, of hiring a scooter is directly proportional to the time, t hours.
2 hours cost £18.
(a) Find a formula for C in terms of t.
(b) For how long can you hire it with £63?

Hours	Cost (£)
0	0
2	18
1	9

÷ 2 ÷ 2

(a) $C = 9t$

(b)

8

The cost, C pounds, of petrol is directly proportional to the volume, V litres.
20 litres cost £31.
(a) Find a formula for C in terms of V.
(b) How many litres can you buy with £46.50?

Litres	Cost (£)
0	0

(a)

(b)

Direct proportion: worded problems *further practice*

9

The cost, C pounds, of carpet is directly proportional to its area, A m^2.
5 m^2 of carpet cost £85.
(a) Find a formula for C in terms of A.
(b) Find the cost of 12 m^2.

Answer

10

The volume of water, V litres, from a tap is directly proportional to the time, t minutes. In 3 minutes 24 litres come out. How long does it take to fill a 100 litre tank?

Answer

11

y is directly proportional to x.
Complete the table.

x	2	5		12
y	7		28	

Answer

12

The number of euros, E, is directly proportional to the number of pounds, P. £50 buys 58 euros.
(a) Find a formula for E in terms of P.
(b) How many euros does £175 buy?

Answer

13

The distance, d miles, a car can travel is directly proportional to the fuel, f litres. On 8 litres it travels 92 miles.
How much fuel does it need to travel 161 miles?

Answer

14

The cost, C pounds, of wire is directly proportional to its length, L metres.
4 m cost £10. Ali says $C = 0.4L$.
Explain his mistake and write the right formula.

Answer

15

The mass of flour, F grams, is directly proportional to the number of biscuits, n. 12 biscuits need 300 g of flour. Jo has 1 kg of flour.
How many biscuits can she make?

Answer

16

A plumber charges £40 for 1 hour and £70 for 2 hours. Sam says the charge is directly proportional to the time, so $C = 40t$. Is Sam right? Explain.

Answer